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## Supplementary Materials for

Toxic effects and metabolic response mechanisms of amino-modified polystyrene nanoplastics and arsenic on Microcystis aeruginosa

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## Text S1

The three-dimensional fluorescence characteristics of the extracellular polymeric substances (EPS) solutions were analyzed using three-dimensional excitation-emission matrix (3D-EEM) fluorescence spectroscopy (LS-55, Perkin Elmer, USA). Detection conditions were as follows: excitation wavelength (Ex) and emission wavelength (Em) scanning ranges were 220–580 nm and 250–600 nm, respectively, with increments of 5 nm and a scan rate of 1200 nm min<sup>-1</sup>. The total organic carbon (TOC) content in the EPS was measured using a total organic carbon/total nitrogen analyzer (Multi N/C 2100, Jena, Germany).

Temperature	Z-average	Polydispersity	Aggregation	Zeta	Electrophoretic	Conductivity
(°C)	diameter	index	Index	potential	mobility	(mS/cm)
	(d.nm)	(PdI)		(mV)	(µmcm/Vs)	
25	$39.35\pm0.28$	$0.05\pm0.01$	0	$41.37 \pm 1.10$	$3.24\pm0.09$	$0.03\pm0.00$

## Table S1 Raw DLS data

## Table S2 Treatment details

Treatment Group	PSNPs-NH <sub>2</sub> (mg·L <sup>-1</sup> )	Arsenic (mg·L <sup>-1</sup> )	Label
Control	0	0	Control
	0.1	0	PS-L
PSNPs-NH <sub>2</sub> alone	0.5	0	PS-M
	1	0	PS-H
Arsenic alone	0	5	As
	0.1	5	AP-L
$PSNPs-NH_2 + Arsenic$	0.5	5	AP-M
Co-exposure	1	5	AP-H



Figure S1 (a) confocal microscopy analysis of Cyanobacterial absorption of PSNPs-NH<sub>2</sub>, (b) 3D EEM fluorescence spectra of soluble extracellular polymeric substances (S-EPS) and loosely bound extracellular polymeric substances (LB-EPS).